



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,955	10/30/2003	Ikuya Kikuchi	041465-5211	6270
55694	7590	06/12/2007	EXAMINER	
DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209			ALUNKAL, THOMAS D	
		ART UNIT	PAPER NUMBER	
		2627		
		MAIL DATE	DELIVERY MODE	
		06/12/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/695,955	KIKUCHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Thomas D. Alunkal	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 23 March 2007.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,2,4-9,11 and 12 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,2,4-9,11 and 12 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 30 October 2003 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

***Response to Arguments***

Applicant's arguments filed 3/23/07 have been fully considered but they are not persuasive.

It is noted that applicant has amended independent claim 1 to include features of previous claim 3. Likewise, features of previous claim 10 have been added to claim 8. Applicant argues that Nakagawa does not disclose features of previous claims 3 and 10. The Examiner points out that Nakagawa is only being relied upon to disclose the given range cited in previous claims 3 and 10.

Applicant further argues this point by noting that Nakagawa is composed of group lenses, which are stationary. However, Takahashi was relied upon in the previous Office Action to disclose these deficiencies. Namely, Takahashi, in Figure 4, discloses a converging lens (Element 37a) and a diverging lens (Element 37b) which are each movable by lens actuators (Elements 38a and 38b). On the other hand, Nakagawa (see Column 1, lines 35-40, 48-68, and Column 2, lines 1-18) discloses the range of previous claims 3 and 10, which is provided to the device of Takahashi.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2,4-5,8-9, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (U.S. 6,108,139) and in view of Nakagawa (U.S. 3,887,269).

Regarding claim 1, Takahashi discloses a spherical aberration correcting unit for correcting an aberration caused in an optical beam radiated toward an object to be detected and focused on the object, the unit (Column 2, lines 20-24 and lines 46-50) comprising an aberration corrector composed of a plurality of optical members and configured to form an optical beam into a parallel pencil and to correct aberration caused in the optical beam (see Column 2, lines 24-33, Column 2, lines 46-50), the optical members including at least a converging lens (Column 6, lines 5-7 and Figure 4, Element 37a) and a diverging lens respectively (Figure 4, Element 37b), a driver configured to drive only one of the converging lens and the diverging lens in an optical axis direction of the optical beam (Column 6, lines 16-20. Specifically, both collimator lens units 37a and 37b are movable. Thus, either one can be moved to compensate for aberration), a light receiver configured to receive light reflected from the object to produce a light-reception signal from the received light (see Figures 1 and 3, Element 17), a controller configured to control the driver based on the produced light-reception signal (see Column 3, lines 40-45). Takahashi does not disclose wherein a relationship of  $0.2 < |f_1/f| < 0.82$  is established, wherein a composite focal length of the converging lens and the diverging lens of the aberration corrector is f and a focal length of the driven one of thus driven one of the converging lens and the diverging lens is  $f_1$ . In the same field of endeavor, Nakagawa discloses wherein

a relationship of  $0.2 < |f_1/f| < 0.82$  is fulfilled, wherein a composite focal length of the aberration corrector is  $f$  and a focal length of the driven optical member is  $f_1$  (see Column 1, lines 35-40, 48-68, Column 2, lines 1-18). One of ordinary skill in the art at the time the invention was made could easily discern that dividing Condition 1 (Column 1, line 36) by  $f$  (composite focal length), the resulting relationship lies within the range specified by Claims 3 and 10 (see MPEP, 2131.03).

It would have been obvious to one of ordinary skill in the art at the time the invention was to incorporate Nakagawa's teachings into the range of Takahashi's teachings. Both Takahashi and Nakagawa teach lens system focal length limitations that are used to correct spherical aberration. As stated by Nakagawa (Column 1, 48-68, Column 2, lines 1-18), this limitation is essential to remarkably improve spherical aberration. Since Takahashi and Nakagawa both disclose inventions that teach methods for correcting spherical aberration, one of ordinary skill in the art at the time the invention was made would have found it *prima facie* obvious to combine both teachings because the focal length relationship taught by Nakagawa is used in a lens system, which achieves the same function as the invention taught by Takahashi.

It is also noted that it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the relationship of  $0.2 < |f_1/f| < 0.82$  to the optical head device of Takahashi, since it has been held that where the general conditions of a claim are disclosed in the prior art,

discovering the optimum or workable ranges involves only routine skill in the art.

*In re Aller*, 105 USPQ 233.

Regarding claim 2, Takahashi discloses wherein the object is an optical information recording medium (see Figure 1, Element 3).

Regarding claim 4, Takahashi discloses wherein the aberration corrector is a collimator lens (see Column 5, lines 10-13).

Regarding claim 5, Takahashi discloses wherein the any one of the optical members is composed of a plurality of lenses (see Figure 4, Element 37a).

Regarding claims 8, 9, and 11, these claims contain limitations similar to those in claims 1, 2 and 4, respectively, and are rejected over the same grounds.

Regarding claim 12, method claim 12 is drawn to the method of using the corresponding apparatus claimed in claim 8. Therefore method claim 12 corresponds to apparatus claim 8 and is rejected for the same reasons of obviousness as used above.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi and Nakagawa as applied to claims 1-2,4-5,8-9, and 11-12 above, and further in view of Duncan (US 6,147,953).

Regarding claim 6, Takahashi does not disclose wherein at least one of the converging lens and the diverging lens has an aspheric surface. In the same field of endeavor, Arai discloses wherein at least one of the converging lens and the diverging lens has an aspheric surface (Figure 4, Element 44 and Column 4, lines 6-15)

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide the optical head device of Takahashi with the aspheric lens surface of Duncan, motivation being to correct wavefront aberrations while reducing the total number of lenses provided in the collimating lens system.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi and Nakagawa as applied to Claims 1-2,4-5,8-9, and 11-12 above, and further in view of Ward et al. (hereafter Ward) (Published April 1971, "Lens Aberration Correction by Holography").

Regarding claim 7, Takahashi does not disclose wherein a hologram is attached to at least one of the converging lens and the diverging lens. In the same field of endeavor, Ward discloses attaching a hologram to a converging or diverging lens (see Page 1, Introduction).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Ward et al.'s teachings into the range of Takahashi's teachings. Both disclose methods for correcting lens aberration. As exemplified by Ward et al., the use holograms to correct aberrations (filtering out phase) has been well known in the art since the early 1970's. Furthermore, one would have been motivated to combine the two teachings because the use of a hologram as an aberration corrector is both cheaper and more practical (see Introduction). Thus, it would have been *prima facie* obvious to one of ordinary

Art Unit: 2627

skill in the art at the time the invention was made, with a reasonable expectation of success to combine the above teachings of Takahashi and Ward et al., as it pertains to the disclosed invention because Ward et al. teaches exactly wherein a hologram corrects the aberration of a lens with a collimated reference.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

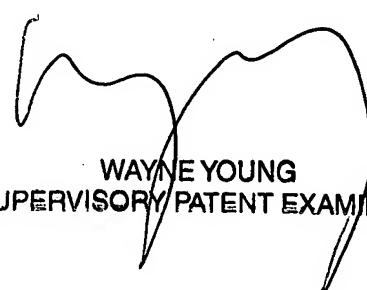
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Alunkal whose telephone number is (571)270-1127. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571)272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas Alunkal/  
Examiner Art Unit 2627



WAYNE YOUNG  
SUPERVISORY PATENT EXAMINER